

Abstract of the Disclosure

The present invention resides in an optical fiber able to form an optical transmitting line for wavelength division multiplexing transmission in a wavelength band of 1.5 μm using a Raman amplifier, and an optical communication system using this optical fiber. The optical fiber has an effective core area from 40 μm^2 to 60 μm^2 in a set wavelength band of at least one portion of a wavelength band of 1.5 μm ; a dispersion value from 4 to 10 ps/nm/km at a wavelength of 1.55 μm ; a dispersion slope set to a positive value equal to or smaller than 0.04 ps/nm²/km in a wavelength band of 1.55 μm ; and a zero dispersion wavelength equal to or smaller than 1.4 μm . Further, a cutoff wavelength is set to be equal to or smaller than 1.5 μm at a length of 2 m, and a bending loss is set to be equal to or smaller than 5 dB/m at a diameter of 20 mm in the wavelength band of 1.5 μm . In a refractive index profile of the optical fiber, for example, a relative refractive index difference $\Delta 1$ of a first glass layer as an innermost layer with respect to a reference layer, and a relative refractive index difference $\Delta 3$ of the refractive index of a third glass layer as a third layer from an inner side with respect to the reference layer are set to be positive. Further, a relative refractive index difference $\Delta 2$ of a second glass layer as a second layer from the inner side with respect to the reference layer is set to be negative.